

10/671, 238

In the Claims

1-52. (Canceled)

1 ~~53.~~ (Currently Amended) ~~The solar cell of claim 52~~ A solar cell, comprising:
a substrate;
a conductive film disposed on a surface of the substrate, wherein the conductive film
includes a plurality of discrete layers of conductive materials, wherein the discrete layers of
conductive materials include ~~comprise~~:
at least one metallic layer of material selected from one or more groups
comprising copper, silver, aluminum, molybdenum, and niobium; and
at least one barrier layer made substantially of a transition metal nitride material;
at least one p-type semiconductor absorber layer disposed on the conductive film,
wherein the p-type semiconductor absorber layer includes a copper indium diselenide (CIS)
based alloy material;
an n-type semiconductor layer disposed on the p-type semiconductor absorber layer,
wherein the p-type semiconductor absorber layer and the n-type semiconductor layer form a p-n
junction; and
a transparent electrically conductive top contact layer on the n-type semiconductor layer.

2 ~~54.~~ (Currently Amended) The solar cell of claim 53, wherein the ~~barrier layer~~
transition metal nitride material is selected from one or more groups comprising titanium nitride,
zirconium nitride, and hafnium nitride.

3 ~~55.~~ (Currently Amended) The solar cell of claim 53, wherein the barrier layer
comprises substantially of zirconium nitride.

10 ~~56.~~ (Currently Amended) ~~The solar cell of claim 52~~ A solar cell, comprising:
a substrate;

a conductive film disposed on a surface of the substrate, wherein the conductive film includes a plurality of discrete layers of conductive materials, wherein the discrete layers of conductive materials ~~comprise~~ include:

- a first layer of copper;
- a second layer of silver; and
- a plurality of barrier layers each a transition metal nitride material;

at least one p-type semiconductor absorber layer disposed on the conductive film, wherein the p-type semiconductor absorber layer includes a copper indium diselenide (CIS) based alloy material;

an n-type semiconductor layer disposed on the p-type semiconductor absorber layer, wherein the p-type semiconductor absorber layer and the n-type semiconductor layer form a p-n junction; and

a transparent electrically conductive top contact layer on the n-type semiconductor layer.

4 ~~51.~~ (Currently Amended) The solar cell of claim ~~53~~ 52, wherein the discrete layers of conductive materials include ~~comprise~~:

- a plurality of metallic layers of material each selected from one or more groups comprising copper, silver, aluminum, molybdenum, and niobium; and
- a plurality of barrier layers each of a transition metal nitride material.

5 ~~58.~~ (Original) The solar cell of claim 57, wherein the barrier layers are each selected from one or more groups comprising titanium nitride, zirconium nitride, and hafnium nitride.

6 ~~59.~~ (Original) The solar cell of claim 57, wherein the barrier layers each comprises zirconium nitride.

11 ~~60.~~ (Currently Amended) ~~The solar cell of claim 52, further~~ A solar cell comprising:
a substrate;
a conductive film disposed on a surface of the substrate, wherein the conductive film includes a plurality of discrete layers of conductive materials;
at least one p-type semiconductor absorber layer disposed on the conductive film, wherein the p-type semiconductor absorber layer includes a copper indium diselenide (CIS) based alloy material;

an n-type semiconductor layer disposed on the p-type semiconductor absorber layer,
wherein the p-type semiconductor absorber layer and the n-type semiconductor layer form a p-n
junction;

a transparent electrically conductive top contact layer on the n-type semiconductor layer;
and

a layer of metallic material disposed between the p-type semiconductor absorber layer
and the n-type semiconductor layer.

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61. (Original) The solar cell of claim 60, wherein the layer of metallic material
comprises zinc.

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62. (Currently Amended) The solar cell of claim 53 ~~52~~, wherein the substrate
comprises thin metallic foil.

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63. (Original) The solar cell of claim 62, wherein the thin metallic foil is selected
from one or more groups comprising stainless steel, copper, and aluminum.

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64. (Currently Amended) The solar cell of claim 53 ~~52~~, wherein the p-type
semiconductor absorber layer has a graded bandgap.

65-80. (Canceled)

Cancelled Claims :

1-52; 65-80

